IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	10/502,504	Confirmation No.: 5942
Applicant	:	Geert Feye WOERLEE et al.	
Filed	:	February 1, 2005	
Title	:	A METHOD OF DRY CLEANING ARTICLES USING DENSIFIED CARBON DIOXIDE	
Art Unit	:	1751	
Examiner Name	:	Amina Khan	
Customer No.	:	28289	

EXPERT'S DECLARATION UNDER 37 C.F.R. § 1.132

I, Geert Feye Woerlee, declare as follows:

1. I am a citizen of Haarlem, the Netherlands and reside at Bos en Vaartstraat 11. I graduated from Delft University of Technology in Delft and received a degree in Applied Physics. I have 16 years experience within the field of CO_2 technology , working for Delft University of Technology and FeyeCon.

2. I have read and am thoroughly familiar with the contents of the above-identified patent application. Furthermore, I have read and understand the Office Action dated December 9, 2006 and the issues and prior art references listed therein, specifically U.S. Patent No. 6,200,352 to Romack et al.

3. As an expert in the field of CO_2 technology, it is my opinion based on the disclosure of Romack et al. that Romack et al. did not intend or appreciate the use of a solid surfactant in the dry cleaning process. I believe that Romack et al. intended and desired that any surfactant present would be dissolved by their purposeful and required use of a co-solvent. Based upon the disclosure of Romack et al. and their teaching of the use of a supplemental co-solvent, to the best of my knowledge the compositions of Romack et al. do not contain any solid surfactant and therefore Romack et al. do not teach the preparation of cleaning compositions containing solid surfactants and do not even predictably disclose them.

4. For the reasons explained below, the test results set forth in the original patent specification evidence new and unexpected results for a method of dry cleaning an

article, especially fabric by contacting the article with a fluid dry cleaning composition containing densified carbon dioxide at a temperature between -20 and 60°C and a pressure between 1 and 100 MPa, and separating the article and the fluid dry cleaning composition in which the fluid dry cleaning composition contains ionic surfactant in a concentration of between 0.01 and 15% by weight of the carbon dioxide, and in which at least 10% of said ionic surfactant is present in an undissolved solid form and in which the ionic surfactant is represented by the formula R_1X, XR_1X or R_2YR_2' (substituents omitted).

5. I attest that the surfactants utilized in Examples 1-11 are representative members of the class of surfactants taught in the above-mentioned patent application. Each representative member corresponds to one of the primary subclasses of ionic surfactants (i.e., cationic, anionic, or zwitterionic). One skilled in the art realizes that the ionic surfactants disclosed in Claim 11 will behave similarly to their representative member and produce similar results.

6. I confirm that the surfactants described in the above-cited patent application maintain an intrinsic solid nature when used in accordance with the described cleaning operation (Specification page 4, first sentence). The surfactants which are liquid at room temperature and atmospheric pressure, form solid particles as a result of chemical or physical interaction with other components present in the cleaning composition. (Specification page 4, second sentence).

7. I attest that Examples 6, 7, 8, and 9 demonstrate that an increase in the concentration of undissolved ionic surfactant increases the cleaning performance of the cleaning cycle, as follows. In these examples the amount of dissolved surfactant was the same. (Specification page 15, second to last sentence). Because the total quantity of ionic surfactant increased in each of Examples 6, 7, 8, and 9 respectively and the amount of dissolved surfactant remained the same, it follows that the total amount of undissolved (solid) surfactant increased in each of Examples 6, 7, 8, and 9. This is expressed by the following mathematical equation, where "x" grams is the constant amount of dissolved surfactant:

Undissolved Surfactant = Total Surfactant – (x)g , as shown in the table below.

8. The quantity of ionic surfactant utilized for Examples 6, 7, 8, and 9 as well as the observed results are summarized in the following table:

Example	Amount of Ionic Surfactant (Octadecylamine)	Amount of Ionic Surfactant(Octadecylamine) in solid form	Observation Through the Viewing Glass

6	1 g	(1- x) g	Small particles were observed
7	5 g	(5- x) g	Small particles were observed
8	10 g	(10-x) g	A substantial amount of small particles were observed
9	40 g	(40-x) g	A large amount of small particles were observed

9. The increase of small particles, or undissolved surfactant, resulted from the precipitation of the ionic surfactant out of solution. The precipitate formed when the solution became supersaturated by the ionic surfactant. In other words, the solution contained more of the ionic surfactant than could be dissolved by the solution under these circumstances.

10. The results summarized in the table on page 15 of the above-identified application show that as the amount of undissolved surfactant increases from 1-X g to 40 - X g for Examples 6, 7, 8, and 9, so does the overall cleaning performance of the washing cycle. These results are summarized in the table below:

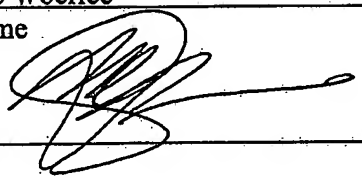
Examples				
	6	**7**	**8**	**9**
Sebum on wool	55	57	79	89
Sebum on polyester	36	42	48	58
Egg-yolk on wool	60	60	62	64
Egg-yolk on polyester	51	48	49	53
Butterfat on cotton	84	86	86	84
Butterfat on blend fabric	89	89	90	87
Vegetable oil on Cotton	55	51	61	65
Vegetable oil on blend fabric	22	15	24	23
Clay on wool	43	35	44	47
Clay on polyester	13	9	2	12

11. Where wool was stained with sebum, increasing the amount of undissolved ionic surfactant increased the cleaning effect as follows. In Example 6, the wool had a cleaning performance index (CPI) of 55% after the dry-cleaning process. As the amount of undissolved ionic surfactant increased for sebum on wool in Examples 7, 8, and 9, the CPI increased to 57%, 79%, and 89% respectively. Similar results showing an overall increase in CPI were seen for sebum stained polyester wherein the CPI increased from 36% in Example 6 to 58% in Example 9; for egg-yolk stained wool where the CPI increased from 60% in Example 6 to 64% in Example 9; for egg-yolk stained polyester where the CPI increased from 51% in Example 6 to 53% in Example 9; for vegetable oil stained cotton where the CPI increased from 55% in Example 6 to 65% in Example 9; and for clay stained wool where the CPI increased from 43% in Example 6 to 47% in Example 9. It is also noted that for butterfat stained cotton, butterfat stained blend fabric, vegetable oil stained blend fabric, and clay stained polyester Examples 6, 7, 8, and 9 showed generally consistent CPI as the undissolved ionic surfactant increased. Overall, therefore, the increase in the amount of solid surfactant in Examples 6, 7, 8, and 9 improved, or at least retained, cleaning ability for common soils on common fabrics and actually improved cleaning ability for sebum or egg yolk on all fabrics (wool and polyester) tested, as well as for vegetable oil on cotton and wool stained with clay. It therefore follows that increasing the amounts of solid surfactants gave new and/or unexpected cleaning results for a significant collection of common stains on everyday fabrics.

12. These results establish that not only is the presence of the solid surfactant important in the instant invention, but that increasing the amount of solid surfactant improves the cleaning ability. Such a conclusion -that the presence and or greater presence of a solid surfactant increases the cleaning ability of a dry cleaning solution- is fundamentally opposite from the disclosure and teaching of Romack et al, where it is recommended that solid surfactant be eliminated all together.

13. I declare further that all statements made herein of my own knowledge are true and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application and any patent issuing thereon.

Geert Feye Woerlee
Typed Name



Signature

29/5 2007
Date